What is claimed is:

1. A cubic gel precursor comprising:

(A) a hydrotrope,

(B) an amphiphile capable of forming a cubic liquid crystalline phase, and optionally

(C) a solvent,

wherein ingredients (A), (B), and (C) are present in mass fractions relative to each other such that

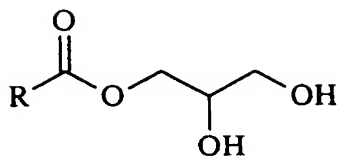
$$1.0 = a + b + c$$

wherein a is the mass fraction of ingredient (A), b is the mass fraction of ingredient (B), and c is the mass fraction of ingredient (C), and wherein $1.0 > a > 0$, $1.0 > b > 0$, $1.0 > c \geq 0$; and with the proviso that a, b, and c do not fall within a cubic liquid crystalline phase region on a phase diagram representing phase behavior of ingredients (A), (B), and (C).

2. The precursor of claim 1, wherein $0.5 \geq a \geq 0.05$, $0.8 \geq b \geq 0.1$, and $0.8 \geq c \geq 0$.

3. The precursor of claim 1, wherein ingredient (A) is selected from the group consisting of low molecular weight alcohols; polyols; alcohol ethoxylates; surfactants derived from mono- and poly- saccharides; copolymers of ethylene oxide and propylene oxide; fatty acid ethoxylates; sorbitan derivatives; sodium butyrate; nicotinamide; procaine hydrogen chloride; and ethylene glycol, propylene glycol, glycerol, and polyglyceryl esters, and the ethoxylated derivatives thereof; and combinations thereof.

4. The precursor of claim 1, wherein ingredient (B) is a monoglyceride having the formula:



, wherein R is selected from the group consisting of monovalent hydrocarbon groups of 6 to 22 carbon atoms, and monovalent halogenated hydrocarbon groups of 6 to 22 carbon atoms.

5. The precursor of claim 1, wherein ingredient (C) is a polar solvent selected from the group consisting of water, glycerol, glycols, formamides, ethylammonium nitrate, and combinations thereof.

6. A bulk cubic liquid crystalline gel comprising:

(A) a hydrotrope,

(B) an amphiphile capable of forming a cubic liquid crystalline phase, and

(C) a solvent,

wherein ingredients (A), (B), and (C) are present in mass fractions relative to each other such that

$$1.0 = a + b + c$$

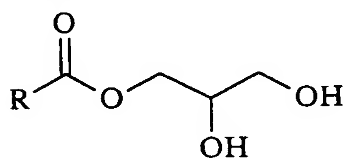
wherein a is the mass fraction of ingredient (A), b is the mass fraction of ingredient (B), and c is the mass fraction of ingredient (C), and wherein $1.0 > a > 0$, $1.0 > b > 0$, $1.0 > c > 0$; and with the proviso that a, b, and c fall within a cubic liquid crystalline phase region on a phase diagram representing phase behavior of ingredients (A), (B), and (C).

7. The gel of claim 6, wherein $0.1 \geq a \geq 0.005$, $0.75 \geq b \geq 0.45$, and $0.6 \geq c \geq 0.1$.

8. The gel of claim 6, wherein ingredient (A) is selected from the group consisting of low molecular weight alcohols; polyols; alcohol ethoxylates; surfactants derived from mono- and poly- saccharides; copolymers of ethylene oxide and propylene oxide; fatty acid ethoxylates; sorbitan derivatives; sodium butyrate; nicotinamide; procaine hydrogen

chloride; and ethylene glycol, propylene glycol. glycerol, and polyglyceryl esters, and the ethoxylated derivatives thereof; and combinations thereof.

9. The gel of claim 6, wherein ingredient (B) is a monoglyceride having the formula:



, wherein R is selected from the group consisting of monovalent hydrocarbon groups of 6 to 22 carbon atoms, and monovalent halogenated hydrocarbon groups of 6 to 22 carbon atoms.

10. The gel of claim 6, wherein ingredient (C) is a polar solvent selected from the group consisting of water, glycerol, glycols, formamides, ethylammonium nitrate, and combinations thereof.

11. A dispersion comprising:

(A) a hydrotrope,

(B) an amphiphile capable of forming a cubic liquid crystalline phase, and

(C) a solvent,

wherein ingredients (A), (B), and (C) are present in mass fractions relative to each other such that

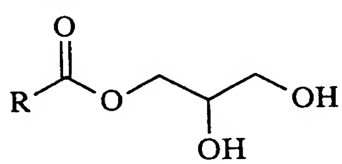
$$1.0 = a + b + c$$

wherein a is the mass fraction of ingredient (A), b is the mass fraction of ingredient (B), and c is the mass fraction of ingredient (C), and wherein $1.0 > a > 0$, $1.0 > b > 0$, $1.0 > c > 0$; and with the proviso that a, b, and c fall within a region representing cubic liquid crystalline phase in combination with at least one other phase on a phase diagram representing phase behavior of ingredients (A), (B), and (C), with the proviso that the dispersion is formed as cubic liquid crystalline gel particulates dispersed in the other phase.

12. The dispersion of claim 11, wherein $0.1 \geq a \geq 0.005$, $0.3 \geq b \geq 0.03$, and $0.9 \geq c \geq 0.6$.

13. The dispersion of claim 11, wherein ingredient (A) is selected from the group consisting of: low molecular weight alcohols; polyols; alcohol ethoxylates; surfactants derived from mono- and poly- saccharides; copolymers of ethylene oxide and propylene oxide; fatty acid ethoxylates; sorbitan derivatives; sodium butyrate; nicotinamide; procaine hydrogen chloride; and ethylene glycol, propylene glycol, glycerol, and polyglyceryl esters, and the ethoxylated derivatives thereof; and combinations thereof.

14. The dispersion of claim 11, wherein ingredient (B) is a monoglyceride having the formula:



, wherein R is selected from the group consisting of monovalent hydrocarbon groups of 6 to 22 carbon atoms, and monovalent halogenated hydrocarbon groups of 6 to 22 carbon atoms.

15. The dispersion of claim 11, wherein ingredient (C) is a polar solvent selected from the group consisting of water, glycerol, glycols, formamides, ethylammonium nitrate, and combinations thereof.

16. The dispersion of claim 11, further comprising (D) a stabilizer.

17. Cubic liquid crystalline gel particles comprising:

(A) a hydrotrope,

(B) an amphiphile capable of forming a cubic liquid crystalline phase,

(C) a solvent, and

(D) a stabilizer,

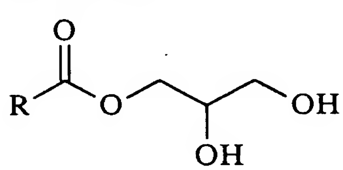
wherein ingredients (A), (B), and (C) are present in relative mass fractions relative to each other such that

$$1.0 = a + b + c$$

wherein a is the mass fraction of ingredient (A), b is the mass fraction of ingredient (B), and c is the mass fraction of ingredient (C), and wherein $1.0 > a > 0$, $1.0 > b > 0$, $1.0 > c > 0$; and with the provisos that a, b, and c fall within a cubic liquid crystalline phase region on a phase diagram representing phase behavior of ingredients (A), (B), and (C), and that ingredients (A), (B), and (C) have a particulate form.

18. The particles of claim 17, wherein ingredient (A) is selected from the group consisting of low molecular weight alcohols; polyols; alcohol ethoxylates; surfactants derived from mono- and poly- saccharides; copolymers of ethylene oxide and propylene oxide; fatty acid ethoxylates; sorbitan derivatives; sodium butyrate; nicotinamide; procaine hydrogen chloride; and ethylene glycol, propylene glycol, glycerol, and polyglyceryl esters, and the ethoxylated derivatives thereof; and combinations thereof.

19. The particles of claim 17, wherein ingredient (B) is a monoglyceride having the formula:



, wherein R is selected from the group consisting of monovalent hydrocarbon groups of 6 to 22 carbon atoms, and monovalent halogenated hydrocarbon groups of 6 to 22 carbon atoms.

20. The particles of claim 17, wherein ingredient (C) is a polar solvent selected from the group consisting of water, glycerol, glycols, formamides, ethylammonium nitrate, and combinations thereof.

21. A method for preparing a cubic gel precursor comprising the steps of:
1) combining (A) a hydrotrope with (B) an amphiphile capable of forming a cubic liquid crystalline phase, and
2) optionally adding (C) a solvent,

wherein ingredients (A), (B), and (C) are combined in mass fractions relative to each other such that

$$1.0 = a + b + c$$

wherein a is the mass fraction of ingredient (A), b is the mass fraction of ingredient (B), and c is the mass fraction of ingredient (C), and wherein $1.0 > a > 0$, $1.0 > b > 0$, $1.0 > c \geq 0$; and with the proviso that a, b, and c do not fall within a cubic liquid crystalline phase region on a phase diagram representing phase behavior of ingredients (A), (B), and (C), and with the proviso that amounts of each ingredient in the composition are such that cubic phase gel forms upon occurrence of a stimulus.

22. The method of claim 21, wherein ingredient (B) is a liquid, and ingredients (A) and (B) are combined by mixing.

23. The method of claim 21, wherein ingredient (B) is a solid, and ingredients (A) and (B) are combined by a method selected from the group consisting of:

(a) heating ingredient (B) to a temperature greater than its melting point and then mixing ingredient (B) with ingredient (A),

(b) fragmenting ingredient (B) into solid particles and thereafter combining ingredient (B) with ingredient (A),

(c) dissolving ingredient (A) in an aqueous hydrotrope solution, and combining the solution with ingredient (B).

24. The method of claim 21, wherein step 2) is carried out at a time selected from the group consisting of during and after step 1).

25. The method of claim 21, further comprising:

3) applying the stimulus.

26. The method of claim 25, wherein the stimulus is selected from the group consisting of:

(a) addition of a specified material selected from the group consisting of additional hydrotrope, amphiphile, and solvent,

(b) removal of a material selected from the group consisting of a portion of the hydrotrope, amphiphile, and solvent,

(c) a temperature change,

(d) a pH change,

(e) addition of a salt,

(f) a pressure change, and

(g) combinations thereof.

27. The method of claim 25, further comprising:

4) removing the hydrotrope after step 3).

28. A method for preparing a cubic liquid crystalline gel composition comprising the steps of:

1) combining in a composition, ingredients comprising (A) a hydrotrope and (B) an amphiphile capable of forming a cubic liquid crystalline phase, and

2) mixing the product of step 1) with (C) a solvent,

wherein ingredients (A), (B), and (C) are combined in mass fractions relative to each other such that

$$1.0 = a + b + c$$

wherein a is the mass fraction of ingredient (A), b is the mass fraction of ingredient (B), and c is the mass fraction of ingredient (C), and wherein $1.0 > a > 0$, $1.0 > b > 0$, $1.0 > c > 0$; and with the proviso that a, b, and c fall within a cubic liquid crystalline phase region on a phase diagram representing phase behavior of ingredients (A), (B), and (C).

29. The method of claim 28, wherein step 1) is carried out by a method selected from the group consisting of:

a) heating ingredient (B) to a temperature greater than its melting point and then mixing with the hydrotrope,

b) fragmenting ingredient (B) into solid particles and combining the solid particles with the hydrotrope, and

c) dissolving ingredient (A) in an aqueous hydrotrope solution, and combining the solution with ingredient (B).

30. The method of claim 28, wherein step 2) is carried out at a time selected from the group consisting of during and after step 1).

31. The method of claim 28, further comprising:

3) removing the hydrotrope after step 2).

32. A method for preparing a dispersion of cubic gel particles directly from a precursor comprising the steps of:

1) dispersing a cubic gel precursor comprising:

(A) a hydrotrope,

(B) an amphiphile capable of forming a cubic liquid crystalline phase, and optionally

(C) a solvent,

wherein ingredients (A), (B), and (C) are present in mass fractions relative to each other such that

$$1.0 = a + b + c$$

wherein a is the mass fraction of ingredient (A), b is the mass fraction of ingredient (B), and c is the mass fraction of ingredient (C), and wherein $1.0 > a > 0$, $1.0 > b > 0$, $1.0 > c \geq 0$; and with the proviso that a, b, and c do not fall within a cubic liquid crystalline phase region on a phase diagram representing phase behavior of ingredients (A), (B), and (C)

wherein dispersing is carried out by a method selected from the group consisting of

a) dispersing the precursor in additional (C) solvent, and

b) dispersing additional (C) solvent in the precursor, and thereafter diluting.

33. The method of claim 32, wherein step 1a) is carried out by a method selected from the group consisting of:

i) applying fluid shear,

ii) applying ultrasonic waves,

iii) extruding through a small pore membrane,

iv) cross membrane emulsifying,

v) impinging from opposing jets of a stream of the precursor and a stream of solvent, and

vi) combining streams of solvent and the precursor in a micro-mixer.

34. The method of claim 32, wherein step 1b) is carried out by a method selected from the group consisting of:

i) spraying a fine mist of the precursor into an environment comprising solvent vapors, and thereafter diluting;

ii) bubbling vaporized solvent into the precursor, and thereafter diluting.

35. The method of claim 32, further comprising:

2) stabilizing the product of step 1).

36. The method of claim 35, wherein step 2) is carried out by a method selected from the group consisting of:

a) adding (D) a stabilizer,

b) forming a coating of lamellar liquid crystalline phase on surfaces of particles formed in step 1)

c) directly dispersing the product of step 1) into a viscous matrix comprising the stabilizer and solvent.

37. The method of claim 35, wherein steps 1) and 2) are combined by adding (D) the stabilizer to (C) the solvent to form a stabilizing composition and thereafter combining the stabilizing composition with the product of step 1).

38. The method of claim 35, further comprising the step of:

3) removing ingredient (A) after step 2).

39. The method of claim 32, wherein the precursor is diluted prior to step 1).

40. The method of claim 38, further comprising the step of:

4) isolating the particles during or after step 3).

41. A method for preparing a dispersion of cubic liquid crystalline gel particles comprising fragmenting a bulk cubic liquid crystalline gel comprising:

(A) a hydrotrope,

(B) an amphiphile capable of forming a cubic liquid crystalline phase, and

(C) a solvent,

wherein ingredients (A), (B), and (C) are present in mass fractions relative to each other such that

$$1.0 = a + b + c$$

wherein a is the mass fraction of ingredient (A), b is the mass fraction of ingredient (B), and c is the mass fraction of ingredient (C), and wherein $1.0 > a > 0$, $1.0 > b > 0$, $1.0 > c > 0$; and with the proviso that a, b, and c fall within a cubic liquid crystalline phase region on a phase diagram representing phase behavior of ingredients (A), (B), and (C).

42. The method of claim 41, wherein fragmenting can be carried out by a method selected from the group consisting of:

a) subjecting the bulk cubic liquid crystalline gel to fluid shear,

b) ultrasonication,

c) dispersal in a micromixer, and

d) membrane emulsification.

43. The method of claim 41, further comprising the step of: isolating the particles after fragmentation.

44. A method for preparing dispersions of cubic liquid crystalline gel particles comprising the steps of:

1) heating (B) a solid amphiphile capable of forming a cubic liquid crystalline phase to a temperature greater than or equal to its melting point,

2) combining the product of step 1) with (A) a hydrotrope,

3) adding (C) water,

wherein ingredients (A), (B), and (C) are present in mass fractions relative to each other such that

$$1.0 = a + b + c$$

wherein a is the mass fraction of ingredient (A), b is the mass fraction of ingredient (B), and c is the mass fraction of ingredient (C), and wherein $1.0 > a > 0$, $1.0 > b > 0$, $1.0 > c \geq 0$; and with the proviso that a, b,

and c fall within an isotropic liquid phase region on a phase diagram representing phase behavior of ingredients (A), (B), and (C)

4) forming a dispersion by a route selected from the group consisting of

i) dispersing the product of step 3) into (C) the water, and thereafter stabilizing;

ii) spraying the isotropic liquid into a humid environment, diluting with sufficient water to form a colloidally unstable dispersion of cubic gel particles, and thereafter stabilizing;

iii) diluting the isotropic liquid with sufficient water to form an interfacially stabilized emulsion phase, sterically stabilizing said emulsion phase, and thereafter, further diluting with additional water; and

iv) dispersing water into the isotropic liquid, further diluting with sufficient water to form an unstable particle dispersion, and thereafter stabilizing.

45. The method of claim 44, further comprising the step of: 4) removing ingredient (A) after step 3).

46. The method of claim 45, further comprising the step of: 5) isolating the particles.

47. A method for manufacturing a cubic liquid crystalline phase material comprising the steps of:

1) preparing a precursor comprising

(A) a hydrotrope,

(B) an amphiphile capable of forming a cubic liquid crystalline phase, and optionally

(C) a solvent,

wherein ingredients (A), (B), and (C) are present in mass fractions relative to each other such that

$$1.0 = a + b + c$$

wherein a is the mass fraction of ingredient (A), b is the mass fraction of ingredient (B), and c is the mass fraction of ingredient (C), and wherein $1.0 > a > 0$, $1.0 > b > 0$, $1.0 > c \geq 0$; and with the proviso that a, b, and c fall at a starting point on a phase trajectory within an isotropic liquid region on a phase diagram representing phase behavior of ingredients (A), (B), and (C);

2) diluting the product of step 1) with ingredient (C) until an end point is reached on the phase trajectory, wherein the end point lies on a tie line between the isotropic liquid region and a cubic phase containing region on the phase diagram.

48. A method for delivering an active ingredient to a substrate comprising:

1) preparing a cubic gel precursor comprising:

(A) a hydrotrope,

(B) an amphiphile capable of forming a cubic liquid crystalline phase,

(C) a solvent, and

(D) an active ingredient,

wherein ingredients (A), (B), and (C) are combined in mass fractions relative to each other such that

$$1.0 = a + b + c$$

wherein a is the mass fraction of ingredient (A), b is the mass fraction of ingredient (B), and c is the mass fraction of ingredient (C), and wherein $1.0 > a > 0$, $1.0 > b > 0$, $1.0 > c \geq 0$; and with the proviso that a, b, and c fall within an isotropic liquid region on a phase diagram representing phase behavior of ingredients (A), (B), and (C), and with the proviso that amounts of each ingredient in the composition are such that cubic phase gel forms upon occurrence of a stimulus; and

2) spraying the precursor onto a substrate.

49. The method of claim 48, wherein the active ingredient is an agrochemical and the substrate is a plant surface.